



OBSERVED PATTERNS OF MISUSE OF CHILD SAFETY SEATS

While more adults and children are wearing safety belts, a new study finds that many children who are placed in child safety seats (CSSs) could be at risk of not attaining the full benefits of the seat because the CSS is not being used properly, not installed according to the manufacturer's recommendations, or that the child is being moved to safety belts too soon. Child restraints are very effective in reducing injuries and fatalities as they are currently used, but are more effective when used properly.

The National Highway Traffic Safety Administration (NHTSA) sponsored a study to observe more than 5,900 children in safety seats or wearing safety belts in suburban shopping centers in the spring and summer of 1995. The Ketron Division of the Bionetics Corporation conducted the study in Mississippi, Missouri, Pennsylvania, and Washington. They identified how CSSs were being misused, documented problems of CSS installation and vehicle occupant protection systems, and linked characteristics of the driver to misuse of child safety seats. Since the study was conducted in only four states, it is not representative of the whole nation.

Infants, Toddlers, and Pre-schoolers

The good news is that the overall restraint use for children under 60 pounds was 87.2 percent, slightly higher than the drivers' rate of 81.6 percent. Restraint use was highest for infants, and declined steadily as children grew older. This study looked at three groups of young children by weight --infants (20 pounds and under), toddlers (20 to 40 pounds), and pre-schoolers (40 to 60 pounds).

In all four states, almost all of the infants were observed in child safety seats (96.6 percent). A few were wearing safety belts (0.5 percent), and slightly more (2.8 percent) were not restrained at all.

The picture changes for toddlers, more of whom were

not restrained at all (11.1 percent), or improperly moved into safety belts (21.4 percent). Two-thirds (67.5 percent) were in child safety seats. This trend continued for pre-school children, who based on their weight between 40 -60 pounds, should be in booster seats. Almost one-fifth (18.6 percent) were not restrained at all, while three quarters (75.3 percent) were wearing safety belts. A few of the pre-schoolers (6.1 percent), were in child safety seats.

Misuse of CSS Observed at 79.5 Percent

The research team observed how the child safety seats were being used. While one researcher interviewed the driver of the vehicle, another observed the installation of the child safety seat and how the child was restrained. Overall, only 20.5 percent of the child safety seats were being used properly. Misuse was 79.5 percent. The specific errors observed are shown in the table.

Errors observed in the way Child Safety Seats were being used¹	
Locking Clip (not used at all or used wrong for seats that required it)	72.0 %
Harness Retainer Clip for Chest (not used at all or used wrong for seats that required it)	58.8 %
Harness Strap (not used at all or used wrong)	45.8 %
Safety Belt (not attached to CSS or attached wrong)	16.9 %
Direction of the CSS incorrect	9.6 %
Harness not attached to crotchplate	3.3 %

¹ the potential risk factor of each of these errors has not been determined.

Built-in child safety seats were used correctly more often than conventional seats. Safety seats were used correctly more often with a vehicle that had a 2-point

lap belt rather than a 3-point lap-shoulder belt.

Children Moved Too Soon to Safety Belts

Children up to 60 pounds are more safely restrained in a child safety seat or a booster seat. Many children were observed using safety belts too soon, and only 32.4 percent of these children were using safety belts correctly -- two thirds were not. Many of the errors were attributed to lap belts that were too high across the abdomen and belts that were too loose. Almost half of the shoulder belt errors occurred because the child was not using the shoulder belt at all when it was present. Most of the other errors occurred when the shoulder belt was too high -- up near or on the child's neck.

Unbelted Drivers More Likely to Have Unrestrained Children

Drivers who were observed to be wearing their own safety belts had fewer (5.4 percent) of the unrestrained children. However, when the driver was unrestrained, almost half of the children (47.3 percent) were also unrestrained. The vehicles that had driver-side airbags or airbags on both driver and passenger sides had slightly higher use of child safety seats, but misuse patterns were similar.

Driver Characteristics

There was no particular relationship between the age or gender of the driver and the use of child safety

seat. Both parents and grandparents showed the same trends. When the driver was a friend or other relative of the child, however, there was a higher percentage of unrestrained children. There were also more unrestrained children as the number of occupants in the vehicle increased. There was very little difference regardless of the distance travelled, the time from the last stop, or whether this was the vehicle regularly driven.

Who Installed the Child Safety Seat?

There was very little difference in misuse of the CSS based on the methods used to install it. When drivers learned on their own, CSS misuse was slightly higher for both CSS installation and placement of the child in the seat. When the safety seat was frequently removed from the vehicle, CSS misuse was slightly higher than when it was only occasionally or never removed from the vehicle.

Recommendations

The study concludes with several recommendations for CSS programs. One key recommendation is the need to conduct research to quantify the impact of various types of CSS misuse on children involved in motor vehicle crashes.

HOW TO ORDER THE REPORT

Limited copies of *Patterns of Misuse of Child Safety Seats* (108 pages) are available. Write to the Office of Program Development and Evaluation, NHTSA, NTS-30, 400 Seventh Street, S.W., Washington, DC 20590, or send a fax to (202) 366-7096. Michael Smith was the program manager for this project.

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